

again. Applicant never pretended on cylindrical cavity, only on new system of microwave distribution in cylinder cavity, as well as in barrel-shaped cavity - non-uniform system of distribution, never filed before. Only You (5,880,442) can stand most close to applicant ideas, but applicant's cavities designs and distribution system are far more modern.

**Claims 1-18 and 20**, filed Aug. 21, 2003, are currently cancelled by an applicant.

**Claim 19**, filed Aug. 21, 2003, is currently amended.

**Claims 32-44** are added as the new claims.

**What is currently claimed is:**

Claims 1-18 (cancelled)

Claim 20 (cancelled)

**19.** (currently amended) [A space saving cooking appliance comprising a partially spherical outer shell with a flat bottom containing a partially spherical cooking space, said spherical cooking space also having a flat bottom parallel to said flat bottom of a said outer shell]

An ellipsoidal microwave oven comprising:

an oval outer shell 14;

a microwave cavity with an oval sidewall 44, flat top 13 and flat bottom 11A and 11B;

a machine compartment located above microwave cavity with antenna 420 located at the center of said flat top 13;

microwaves emitted spherically from antenna 420 on sidewall 44, on flat bottoms 11A and 11B;

a front oval door 34 for inserting and removing food;

**32.** (new) The ellipsoidal microwave oven of claim **19** wherein a shape of said oval outer shell 14 is based on a form of ellipsoid.

**33.** (new) The ellipsoidal microwave oven of claim **32** wherein said ellipsoid is formed by rotation of an ellipse around its vertical axis; said ellipse is built on two axes,

horizontal and vertical, where their ratio is within 1.0 and approximately 2.0.

**34. (new)** The ellipsoidal microwave oven of claim **19** wherein said ellipsoid has a flat horizontal bottom; said horizontal bottom is located above lower point of said ellipsoid for approximately 20 percent of its height.

**35. (new)** The ellipsoidal microwave oven of claim **19** wherein said oval sidewall 44 has a shape of a barrel to reflect microwaves, emitted spherically from antenna 420.

**36. (new)** The ellipsoidal microwave oven of claim **35** wherein the said barrel is formed by revolving a curve 44 around vertical axis of said ellipsoid.

**37. (new)** The ellipsoidal microwave oven of claim **36** wherein said curve 44 is build on points **a-b-c-d-e** found as the reflective points to reflect said microwaves radially from said barrel-shaped sidewall 44 downward onto said bottom 11A, where food mostly remains underheated.

**38. (new)** The ellipsoidal microwave oven of claim **37** wherein said corrugated part 11B has a series round grooves to reflect radially microwaves from said round grooves to the central lower part of cavity to enhance cooking power in said part of the cavity.

**39. (new)** The ellipsoidal microwave oven of claim **38** wherein the center-bound slopes of said round grooves 11B are leant under different angles: the slopes of most centrally placed rings are more steep while the most outer ones are more slopping in order to converge reflected from said round grooves microwaves into the most low zone of the cavity.

**40. (new)** The ellipsoidal microwave oven of claim **19** wherein said microwaves, radially emitted from a single antenna 420 on three different zones - on said oval sidewallwall 44 (**a-b-c-d-e** zone), on said bottom 11A (**f** zone) and on most central part of said bottom 11A (**g-h-i-h-g** zone), create a non-uniform microwave density throughout the cavity, concentrating said density in most needed spots and keeping it thin where it is not needed.

**41. (new)** The ellipsoidal microwave oven of claim **40** wherein said microwave density is most high (except antenna's emission zone) over said bottom 11A (**g-h-i-h-g** zone), where all three flows of said microwaves - directly emitted from said antenna 420, reflected from said oval sidewall 44 and reflected from said round grooves 11B - have been finally come together, creating the most dense microwave zone to be able to penetrate and heat most deep portions of food.

42. (new) The ellipsoidal microwave oven of claim 19 wherein a shape of the said oval door 34 for inserting and removing food complies with the general shape of said microwave oven's ellipsoid, including door's window glass and microwave shield.

43. (new) The ellipsoidal microwave oven of claim 42 wherein said front door 34 opens and closes in an up-and-down manner without a handle; said front door opens up automatically by pressing a button on control panel, and closes pushing the door down by hand.

44. (new) The ellipsoidal microwave oven of claims 19 wherein said front door 34 is windowless.

#### **Once again about applicant's an non-uniform distribution concept**

In conventional box-like cavities, standing microwaves create a chaotic pattern of a coarse-scale microwave uniformity throughout the cavity but with numerous relatively small-scale cold and hot spots, i.e. with thin and thick microwave densities. To overcome this small-scale non-uniformity, or ununiform density, it was invented long ago a turntable to continually change the locations of those small hot and cold spots. However, this system is not effective, because food is under relatively low heat power and therefore heats up slowly.

An applicant went by radically different way - he invented such a cavity which creates a large-scale non-uniformity, concentrating high microwave density (and heat power) only in **needed** locations and leaving it low in unnecessary locations. This is clearly seen on Fig.15, where all standing microwave rays finally get the lower center part of cavity, where the food usually places.

As to the problem with small-scale cold and hot spots in applicant's designs, the high concentration of all microwave rays in relatively small space - just immediately over the center part of bottom - would exclude all those unwanted cold spots, turning them into hot ones and therefore sharply decreasing the cooking time.

In the lower center part of cavity, where food usually places, the microwave density, i.e. heat power, is most high and food heats up much quicker. This can be possible only with a vertically symmetrical cavity and with special shapes of cavity's sidewall and bottom. This is the second essence of the invention. The first essence of it is the weight economy due to the highly effective outer shell form - ellipsoid, and sphere as a particular case of ellipsoids.

The matters (claims 42, 43, 44) about the door which opens and closes in an up-and-down manner and its window are not newcomers. They are described in provisional applications.